

What Is Claimed Is:

1. A method of one of adjusting and locally modifying a resulting direction of magnetization in a layer of a magnetoresistive layer system having a ferromagnetic layer and an adjacent antiferromagnetic layer, the ferromagnetic layer having a resulting magnetization with an associated resulting direction of magnetization that is one of induced and influenceable by the adjacent antiferromagnetic layer, the method comprising:
 - heating at least the antiferromagnetic layer by a heated stamp over a threshold temperature above which an influence of the antiferromagnetic layer on the resulting direction of magnetization of the adjacent ferromagnetic layer at least largely disappears;
 - exposing at least an area of the ferromagnetic layer adjacent to the adjacent antiferromagnetic layer to an external magnetic field of a predefined direction; and
 - subsequently cooling the antiferromagnetic layer again below the threshold temperature.
2. The method as recited in Claim 1, wherein:
 - the cooling is performed by one of removing and cooling the stamp, and
 - a heating is performed one of by a contactless approximation of the stamp to the magnetoresistive layer system and by bringing the stamp into contact with a layer of the magnetoresistive layer system.
3. The method as recited in Claim 1, further comprising:
 - applying the external magnetic field as early as one of at a time of heating to the threshold temperature and after reaching the threshold temperature.
4. The method as recited in Claim 1, further comprising:
 - preserving the external magnetic field after application until the cooling below the threshold temperature.
5. The method as recited in Claim 1, further comprising:
 - providing a plurality of magnetoresistive layer systems on a common substrate, the plurality of magnetoresistive layer systems are designed as locally bounded areas to have insulated surfaces having a size of $5\ \mu\text{m}^2$ to $500\ \mu\text{m}^2$, and one of strips having a width of

0.5 μm to 100 μm and a length of 50 μm to 120 nm and a serpentine-shaped structures having the strips, wherein the plurality of magnetoresistive layer systems is heated over the threshold temperature using the stamp one of at least partly consecutively and simultaneously.

6. The method as recited in Claim 5, wherein:

only a portion of the plurality of magnetoresistive layer systems is heated above the threshold temperature using the stamp, so that in another portion of the plurality of magnetoresistive layer systems, the resulting direction of magnetization in the particular layer associated with the portion remains almost unaffected by heating by the stamp.

7. The method as recited in Claim 5, wherein:

in the locally bounded areas, the resulting direction of magnetization in the layer of the plurality of magnetoresistive layer systems is one of adjusted and modified using the stamp so that a first portion of the plurality of magnetoresistive layer systems has a first resulting direction of magnetization in its particular layer, and a second portion of the plurality of magnetoresistive layer systems has a second resulting direction of magnetization that is different from the first resulting direction of magnetization.

8. The method as recited in Claim 7, wherein:

the second resulting direction is oriented one of perpendicularly or opposite to the first resulting direction, in its layer.

9. The method as recited in Claim 6, wherein:

initially only the first portion of the plurality of magnetoresistive layer systems is heated over the threshold temperature using the stamp,
subsequently a direction of the external magnetic field is changed, and
then only the second portion of the plurality of magnetoresistive layer systems is heated over the threshold temperature using one of the stamp and a second stamp.

10. A heat stamp for heating at least one magnetoresistive layer system on a substrate, comprising:

a base body; and

at least one heatable stamp structure connected to the base body, a lateral dimension of the at least one heatable stamp structure one of being matched to the at least one magnetoresistive layer system and being similar thereto.

11. The heat stamp as recited in Claim 10, wherein:

the at least one heatable stamp structure includes a plurality of heatable stamp structures that are one of different and identical to one another and are connected to the base body, the plurality of heat stamp structures being each associated with the at least one magnetoresistive layer system and being designed to one of match a dimension of and be similar to one of the at least one magnetoresistive layer system and a group of magnetoresistive layer system.

12. The heat stamp as recited in Claim 10, wherein:

the at least one heatable stamp structure has at least approximately a cuboid shape with one of rectangular and square-shaped faces having an area of $5 \mu\text{m}^2$ to 1 cm^2 .

13. The heat stamp as recited in Claim 10, wherein:

the at least one heatable stamp structure has at least approximately a cuboid shape with one of rectangular and square-shaped faces having an area of 0.5 mm^2 to 5 mm^2 .

14. The heat stamp as recited in Claim 10, wherein:

the at least one heatable stamp structure includes a plurality of stamp structures that are heatable at least partially independently of one another.

15. The heat stamp as recited in Claim 14, wherein:

the plurality of stamp structures are heatable to different temperatures.

16. The heat stamp as recited in Claim 10, wherein:

the at least one heatable stamp structure includes a first group of stamp structures and a second group of stamp structures that are adjustable to different temperatures.

17. A method of using a heat stamp, comprising:

using the heat stamp to manufacture at least one magnetoresistive layer system operating by the spin valve principle, the at least one magnetoresistive layer system including a plurality of magnetoresistive layer systems having at least partly different resulting directions of magnetization in their particular layers, wherein the heat stamp includes:

a base body, and

at least one heatable stamp structure connected to the base body, a lateral dimension of the at least one heatable stamp structure one of being matched to the at least one magnetoresistive layer system and being similar thereto

18. The method as recited in Claim 17, wherein the magnetoresistive layer systems are interconnected in the form of a Wheatstone bridge.